

ISSUE 2
SEPT 1982



THE BBC MICROCOMPUTER MAGAZINE

BBC TIPSTER

expert hints: make more of mode 7

SPEED TRIAL AND X MARKS THE SPOT

games listings

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Welcome to issue two of Owl. His first shaky flight from the C&VG nest in June was not uneventful.

Because of distribution problems he flew out two days after most of the magazines had been despatched. Although we hope he has now reached all of you who purchased an early copy of the June C&VG, it is still not too late to claim issue one of Owl if you missed out first time around (see panel at the bottom of this page).

The response from readers in terms of phonecalls and letters about Owl's continued existence has been very encouraging. We also had a lot of phonecalls about the Treasure Hunt and Attack listings - from people who had entered them without any problems and from those of you who swore blind they would not work on your machine - they still seem to work on ours.

But, perhaps because of the many BBC computer mysteries are not yet dispelled by a full and complete manual, we have not received the deluge of games listings we hoped for.

Hopefully our BBC Tipster column - this issue from I.J.K. Software's Ian Sinclair - and the other lessons to be learned from our two listings will provide you with some of the help and encouragement needed to get that you've been considering game under way.

Either a cassette or listings will do. And we pay £10 for each one published, as well as putting your name up in lights.

Owl issue three is provisionally booked into December. By then we hope to have had sufficient interest to bring it up a size. But we intend to continue supporting this marvellous games machine in the Computer & Video Games page when Owl does not appear. So please keep those games coming in.

If you have still not receive our first issue of Owl magazine, please make use of the freepost facilities and fill in and send of the form below. Address the envelope to: Computer & Video Games Owl Supplement. Freepost, Bretton, Peterborough, PE3 8BR.

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THE BBC MICROCOMPUTER MAGAZINE

ISSUE TWO

SEPTEMBER 1982

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BBC Tipster

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Ian and John Sinclair of IJK Software take the Tipster's chair this issue and take you through some BBC graphics secrets.

Bookshelf

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The long-awaited BBC Microcomputer user guide was only a week away from distribution as this issue of Owl went to press. Author John Coll of Acorn, told us that the book runs to 518 pages and includes an introductory section, a reference section and detailed looks at: procedures, functions and machine code entry.

But while we waited for this thorough tome to be completed several other books on the BBC found a ready market. We review three of them.

X Marks the Spot

8

The computer plays a good game of Noughts and Crosses but it won't beat you everytime and it will act as a good guide to games algorithms.

Speed Trail

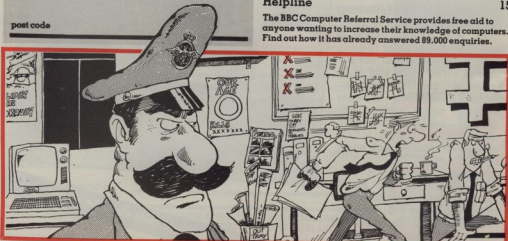
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A race against time on the T.T. track

Helpline

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The BBC Computer Referral Service provides free aid to anyone wanting to increase their knowledge of computers. Find out how it has already answered 89,000 enquiries.



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EDUCATIONAL COMPUTING



Educational Computing covers the whole spectrum of education from university and college level, through secondary and primary schools to special education, local education authorities and other administrative bodies.

We also have an Educational Computing annual dealing exclusively with microelectronics in special education. Called *Learning to Cope*, it is the most comprehensive survey of its kind to be published: covering the marvellous achievements of many dedicated people working with disabled and mentally-handicapped children. *Learning to Cope* costs £1.50 and is available on our stand.

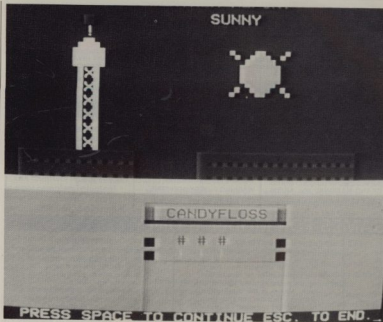
Educational Computing is published 10 times a year and is available only by subscription. One subscription costs £10. For more information about any aspect of Educational Computing, contact us at 8 Herbal Hill, London EC1R 5JB. Tel: 01-278 6556.

As a teacher, you must keep abreast of current affairs and little is going to affect you, your colleagues and your students in the coming months as much as computers.

Educational Computing aims to provide you with the kind of information you need to know: up-to-date news of microcomputers and peripherals, software reviews and how to go about obtaining the kind of program you need, application stories, subject studies, surveys, workshops, features, newsletters from MEP and IT82, book reviews and a chance for readers to air their views and opinions. We show the many interesting and different ways in which people are using computers as teaching aids and give practical advice and guidance.



Special software guide starts September



The sky is blue, the sun is shining — just the right sort of day to become a candyfloss millionaire.

The graphics modes of the BBC Microcomputer will eat up a lot of memory.

But the teletext graphics in Mode 7 can be utilised at the loss of only 1K RAM for screen memory. But there is a catch: the way to use colour in this mode and get the graphics is not outlined in the provisional handbook — or indeed in the first BBC Microcomputer book.

By the time this issue of C&VG reaches you, most people should have received the revised copy of the handbook. This should explain what the Teletext graphics commands are.

In view of this, we shall only briefly look at the commands available, and then endeavour to show how to make use of these commands to draw pictures.

A good example of the kind of graphics that can be obtained from this mode is shown in the illustration taken from our Candyfloss game.

It can be seen from table 1 that there are two sets of colour commands — text and graphics. PRINT CHR\$129; "a" will print the "a" in red, whereas using the graphics colours as in PRINT CHR\$145; "a" will print the graphics character

associated with the letter "a".

Thus, text characters and colours can be chosen and displayed by the following simple rule:

PRINT CHR\$(128+X);
"TEXT"

This will display characters on that line in the logical colour "X" as given in the user guide. Special effects such as flashing characters and double sized characters can be obtained by simply placing the relevant CHR\$(n) between the colour string and the text, with the obvious note that the double sized characters must be printed

twice.

For example, to print "BIG" in double sized characters, in red, we would use:

PRINT CHR\$129; CHR\$141
"BIG" CHR\$129; CHR\$141
"BIG"

The graphics in Mode 7 are made up for a 2 x 3 pixel structure on a 40 x 25 grid. To illuminate the required pixels of a particular character block, refer to table 2, add up the numbers indicated to give the graphics character number, and use as CHR\$(P) where P is the number just

(continued on page 6)

TABLE 1 THE EFFECTS OF USING THE CHR\$(n) COMMAND

CHR\$(n)	Effect
n = 129 - 135	TEXT COLOURS RED - WHITE
n = 136	FLASHING CHARACTER ON
n = 137	FLASHING CHARACTER OFF
n = 141	DOUBLE SIZE TEXT
n = 145 - 151	GRAPHICS COLOURS RED - WHITE
n = 157	BACKGROUND ON
n = 156	BACKGROUND OFF
n = 154	NON - CONTIGUOUS GRAPHICS

TABLE 2 CALCULATING THE CHARACTER NUMBER OF THE GRAPHICS CHARACTER TO BE DISPLAYED

1	2				CHARACTER
4	8	+	160	=	NUMBER
16	64				

The BBC microcomputer is well equipped with a multitude of high resolution graphics commands. However, for the person who wants to use programs of a reasonable size it soon becomes apparent that due to the large amount of RAM taken by the graphics the length of programs becomes appreciably limited. For this reason it is of great value to be able to make use of the Teletext graphics capabilities of the machine. In this article Ian Sinclair and John S. Sinclair of Sinclair (I.J.K. Software) guide you through the mysteries of Teletext graphics.

**TELET
TEXT
BB**



WHAT PEOPLE ARE SAYING ABOUT OUR . . .

BBC MICRO GAMES

"... I bought all your tapes to date for the BBC Micro and I think they are just super, especially STAR TREK, and the sound effects in CANDY FLOSS really made me sit up! Well done and keep them coming!"
J. S., Paisley

"... I was very impressed, not only with the cassette, but also at the speed at which it came!"
— R.L., Cheshire

"... I must congratulate you on your MUTANT INVASION cassette. I have had it for two weeks now and it is really superb. Incidentally, I have beaten your high score of 4,500 — mine is 7,580!"
— S.L., Berks

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(i) STAR TREK. A superb version with 8 x 8 Galaxy, Klingons, Phasers, Torpedoes etc.

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calculated. These commands must always be used with graphics colours — even white!

So, for example, to illuminate the bottom two pixels in red, we would first calculate the graphics character number. Referring to table 2 gives: $16 + 64 + 160 = 240$ for the bottom two pixels. Thus the character string associated with these pixels is CHR\$ 240. As before, graphics colour red can be obtained from the formula CHR\$(144 + 1).

Thus the expression required is: PRINT CHR\$ 145; CHR\$ 240. This can be displayed on any part of the screen using the TAB command.

Special effects can be obtained, as with text, by placing the relevant CHR\$(n) between the colour string and the character string. For example non-contiguous graphics can be obtained on this same structure using: PRINT CHR\$ 145; CHR\$ 154; CHR\$ 240.

Backgrounds can be drawn using the CHR\$ 157 command preceded by the relevant colour string.

PROGRAM LISTING 1

5 MODE 7

```
10 FOR N = 0 TO 13: PRINT CHR$ 134; CHR$ 157; NEXT
20 FOR N = 0 TO 10: PRINT CHR$ 154; CHR$ 148;
   STRINGS (37. CHR$ 255); NEXT
30 PRINT TAB (6.3); CHR$ 147; CHR$ 254; CHR$ 255;
   CHR$ 253
40 PRINT TAB (6.4); CHR$ 147; CHR$ 239; CHR$ 255;
   CHR$ 191
50 PRINT TAB (3.2); CHR$ 147; CHR$ 136; CHR$ 169;
   TAB (8); CHR$ 166
60 PRINT TAB (3.5); CHR$ 147; CHR$ 136; CHR$ 184;
   TAB (8); CHR$ 228
70 FOR Y = 10 TO 12: PRINT TAB (7.Y); CHR$ 145
80 FOR X = 15 TO 21
90 READ CHARACTER: PRINT TAB (X.Y); CHR$
   (CHARACTER)
100 NEXT: NEXT
110 DATA 160, 160, 224, 254, 244, 160, 160, 160, 163,
   235, 163, 161, 160, 162, 239, 255, 255, 255, 191, 161,
   120 GOTO 120
```

PRINT CHR\$ 129; CHR\$ 157 will print a red background for that particular line. A full coloured background can thus be obtained by simply using:

```
FOR A = 0 TO 24: PRINT
CHR$ 129; CHR$ 157; NEXT
```

It is important to remember that when printing on a coloured background, the colour

string of the text must be inserted in between the background character and the text. Thus, to print yellow "HELLO" on a red line, we would use: PRINT CHR\$ 129; CHR\$ 157; CHR\$ 131 "HELLO"

The program listing illustrates how to use these points to draw a simple picture of a boat on the sea.

Line 10 draws the background sky.
Line 20 draws the foreground sea, using CHR\$ 154 to produce non-contiguous graphics.
Line 30-40 draw the sun.
Line 50-60 draw the suns rays, using CHR\$ 136 to make them flash on and off.
Lines 70-110 draw the boat using two indented FOR-NEXT loops to read the graphics character numbers to be printed out from the DATA statement.

Line 70 is used to print the colour string of the graphics characters, while line 90 prints the character themselves.

In conclusion then, we hope we have shown that despite the BBC Micro having powerful graphics command in modes 0-6, it is also relatively simple to use Mode 7 graphics.

With a little careful calculating it is possible to produce quite startling pictures in this mode.

It is also ideal for block graphics games such as Breakout, or for adding graphics to those memory munching adventure games!

LET YOUR BBC MICRO TEACH YOU TO PROGRAM

Let Your BBC Micro Teach You To Program is the long-winded and misleading title to Tim Hartnell's first book on the BBC machine.

Misleading because any newcomer to programming will need more help and space devoted to the fundamentals of the art than Hartnell has allowed.

The chapters tend to jump in a not completely logical progression and too many assumptions are made about the beginner's ability to understand Basic when it is presented at such a rapid pace. The lack of index or glossary of terms do not help either.

But if you already understand Basic, this book will help you get much more out of your BBC micro.

Points are illustrated by programs, a practise I wholeheartedly approve of and there are 40 of them laid out in this book. Several of these are well documented so you know what each line is helping to achieve.

It is quite comprehensive considering its small size and many of the programs are useful and interesting, although they are often introduced long before the novice, working his way through the book, could begin to grasp their complexities. And occasionally too much reliance is placed on the use of programs to demonstrate points.

There is a good development of mode 7 graphics and colour and use of CHR\$ 141 and the VDU statements are outlined in detail but with no explanation of why VDU 29 should be missing.

No mentions of the MOVE and DRAW statements must surely be an oversight and PLOT is only dealt with in a superficial way with no mention of its uses in producing graphs.

You ought to know you Basic before you buy this book but it will take you further into the cloudy areas of the BBC micro than anything else I have so far read. **Let Your BBC Micro**

Teach You To Program costs £4.95 and is available from Interface Publications, 44-46 Earls Court Road, London W8.

PRACTICAL PROGRAMMING FOR THE BBC COMPUTER AND ACORN ATOM

Practical Programming for the BBC Computer and Acorn Atom is a delightfully unpretentious and uncomplicated title.

The book, by Acornsoft's David Johnson-Davies was – not surprisingly – one of the first BBC books on the scene and all the programs will run on the model A, although some of the graphs and patterns can be modified to take advantage of the hi-res model B graphics.

For your money you get over 20 programs divided into: games, graphs and patterns, word programs, arithmetic programs and a long section devoted to a compiler.

The programs are quite sophisticated and remarkably streamlined, with complex screen displays resulting from the briefest number of lines.

The patterns are really good examples of tight programming and a lesson to us all in making the machines do the work. Not all of the programs qualify as practical but if not they are usually either amusing or spectacular.

I would have liked more introduction and explanation to the programs which also suffer from some poor presentation. This has the affect of making the longer ones look rather daunting to key-in. The games are old favourites which you will have seen before.

It is a small book but a lot has been packed into it. Even so a lot of application and effort is expected from the reader if he is going to reap the rewards in terms of a better understanding of programming techniques and the machine he is using.

Practical Programming for the BBC Computer and Acorn Atom cost £4.95 and is published by Sigma Technical Press, 5, Alton Road, Wilmslow, Cheshire.

BASIC PROGRAMMING IN THE BBC COMPUTER

Aimed at the inexperienced programmer, **Basic programming on the BBC microcomputer** does fulfill its title's promise.

It had a good introduction, uses simple language and the early chapters lead towards a reasonable understanding of programming techniques.

Each chapter is completed with a useful discussion summarising what has been learnt and, in the time-honoured way, suggesting exercises to help increase your understanding. The program examples are practical and the one on animation in chapter nine particularly useful for would-be games writers.

Authors Neil and Pat Cryer have also produced a good introduction to the ENVELOPE statement and the book is graced with a thorough and very helpful index.

But this is a case of good as far as it goes. It is a basic – with a small "b" as well as a capital letter – introduction and misses out on several areas which would interest the committed user.

There is no mention of colour graphics in mode 7 – in fact the book misleadingly claims that this is not possible – and the book also ignores the use of "chunky" graphics in mode 7. Because of these omissions, many possibilities for colourful animation and backgrounds in mode 7 are not considered and undue emphasis is placed on mode 5's abilities in this respect.

Other quibbles involve the explanation of binary arithmetic operations and their application to the GCOL statement are very confusing and there is not a complete list of VDU and CHR\$ statements.

A good book for those early days with the BBC micro.

Basic Programming on the BBC Microcomputer costs £5.95 and is published by Prentice Hall International of 66, Wood Lane, Hemel Hempstead, Herts.

The introductory manual supplied with the BBC Microcomputer left many owners still groping in the dark about the possibilities of this fine machine.

While the long-awaited and supposedly very comprehensive owners' manual continued to be delayed, some enterprising publishers beat the official manual to the bookshelves.

Here we look at three which have helped sate the demand for more understanding of the BBC micro, all very different but all giving further insights into making the most of your computer.

BOOKS



LIST

```

10 REM Osk&e
20 CLS
30 REM DRAW CROSS
40 BOTO140
50 DEF PROCROSS
60 FOR=0T023
70 PRINTTAB(0,A);CHR(145);CHR(157
80 IF=2AND(18 THENPRINTTAB(15,A);CHR(147);CHR(53);TAB(21,1);CHR(147);CHR(106
90 NEXT A
100 FOR=0T0125TEP4
110 PRINTTAB(10,B);CHR(147);STRING$(5,CHR(44));CHR(61);STRING$(5,CHR(44));CHR(110
120 NEXT B
130 ENDFOR
140 PROCROSS
150 REM TITLE&INSTRNS.
160 PRINTTAB(12,5);CHR(135);"N O U G H T S"
170 PRINTTAB(16,10);CHR(135);"A N D "
180 PRINTTAB(12,15);CHR(135);"C R O S S E S"
190 PRINTTAB(0,23)
200 FOR=1T06000;NEXT
210 PRINTTAB(2,18);CHR(135);"You play 'O', the computer plays 'X'"
220 PRINTTAB(2,20);CHR(135);"Use keys 1 to 9 to place your 'O' in"
230 PRINTTAB(2,22);CHR(135);"the numbered positions. You start."
240 PRINTTAB(0,23)
250 FOR=1T016000;NEXT;CLS
260 PROCROSS
270 REM ENTER POSN. NUMBERS
280 PRINTTAB(10,7);CHR(131);1;TAB(18,7);CHR(131);2;TAB(26,7);CHR(131);3
290 PRINTTAB(10,11);CHR(131);4;TAB(18,11);CHR(131);5;TAB(26,11);CHR(131);6
300 PRINTTAB(10,17);CHR(131);7;TAB(18,17);CHR(131);8;TAB(26,17);CHR(131);9
310 PRINTTAB(0,23)
320 REM SET COORDINATES FOR O OR X PRINT POSITIONS AND REGISTER THEM AS INITIA
330 LLY EMPTY
330 RESTORE350
340 DIM(9),Y(9),A(9)
350 DATA12,5,0,18,5,0,24,5,0,12,10,0,18,10,0,24,10,0,12,15,0,18,15,0,24,15,0"

```

XMA

RUNS ON A BBC

Colour in the BBC's mode 7 has been a running theme in this issue of Owl, so we had to have a game example which illustrated it.

This is a simple noughts and crosses program which will still help plunge deep into the complexities of programming a strategy game on a computer

Tim Hartnell's previous books have been warmly welcomed by the computer press:

"... This is undoubtedly the book to read ..." Personal Computer World
"... A book to be recommended ..." Computing Today

The book you've been waiting for!

This is a book that will allow you to make the most of the ZX Spectrum — a book that will lead to you 'expert programmer' status within weeks.

There are two major sections — the first for those who have no previous experience of computer programming, and the second containing advanced material for really powerful programming. All sections of the book make good use of the full eight colours, sound generation and high-resolution graphics. You're also shown how to make the most of Sinclair BASIC features such as DEF FN, SCREEN\$, MERGE and FLASH.

Key features of 'Programming Your ZX Spectrum'

- Using the colour effectively — BRIGHT, FLASH, INVERSE and more.
- Sound — there's more to the BEEP than meets the ear.
- Finding your way around the keyboard, the use of every keyword, command and function.
- High resolution graphics — how to use them for stunning displays, how to create your own version of the famous arcade game 'Pacman' with user-defined graphics.
- The ZX Spectrum has the full ASCII character set and this book includes a word processor program to make best use of it.
- The Spectrum LOAD and SAVE is highly reliable, and the MERGE and VERIFY features increase its flexibility. Programming Your ZX Spectrum outlines simple ways to ensure you never lose a program.



234
PAGES!

The ZX Printer

All program listings are dumped direct from the ZX Spectrum, so all programs are guaranteed to run.

The Microdrive

An appendix to this book details the commands needed to use your ZX Spectrum with the Microdrive microfloppy so you'll be ready when it comes on the market.

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- () Mastering Machine Code on your ZX81 — Baker £7.50
- () 20 Simple Electronic Projects for the ZX81 — Adams £6.45
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- () 49 Explosive Games for the ZX81 — edited Hartnell £3.95

BBC Micro

- () Let Your BBC Micro Teach You to Program — Hartnell £6.45
- () The BBC Micro Revealed — Ruston £7.95

Total enclosed £

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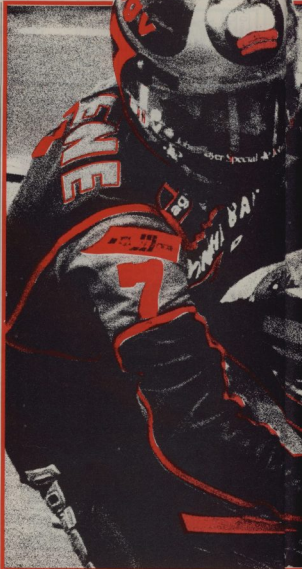
Address

Computers & Video Games


```

20 REM "SPEEDTRIAL" by D.A.BUNTING
30 MODES
35VDUI9,2,5,0,0,0:COLOUR2
42PRINT TAB(5,16)"Speed Trial"
43FOR C=1 TO 5000:NEXT C
50MODE 4
60 VDU 19,1,3,0,0,0:COLOUR1
70PRINT TAB(6,14)"Would you like
instructions?"
80GS=GET$
90IF GS="Y" GOSUB 1000
94 CLS
95 PRINT TAB(6,14) "How many laps would you
like?"
96RS=GET$
97F1=VAL(R$):IF F1<1 THENGOTO95
110MODES
120VDUI9,0,3,0,0,0:VDUI9,1,4,0,0,0
140GCLO,1
150PLOTS,0,1050
160PLOTS,1200,1050
170PLOTS,1200,0
180PLOTS,0,0
190PLOT4,1050,150
200PLOTS,150,150
210PLOTS,150,900
220PLOTS,1050,900
230PLOTS,1050,750
240PLOTS,150,750
250PLOT4,150,450
260PLOTS,1050,450
270PLOT4,1200,600
280PLOTS,300,600
290PLOT4,1200,300
300PLOTS,300,300
310VDUI9,2,5,0,0,0:GCLO,2
330PLOT4,600,1050
340 PLOT 5,600,900
360X=600:Y=975:F=0
370A=180:S=0
390 VDU19,3,0,0,0,0:GCLO,3
392 X1=X:Y1=Y
393 PLOT4,X,Y
394 GOSUB 2040
410PRINTTAB(5,6)"GET READY"
420FOR C1=1 TO 2000:NEXT C1
440PRINTTAB(5,6)" GO!! "
445 FOR C1=1 TO 2000:NEXT C1
450 TIME=10
455 PRINTTAB(5,6)"TIME="TIME/100
460 A1=A
461 IF S=0 THEN SOUND4,500,163,5
462IFS=25 OR S=-25 THEN SOUND4,500,2,7
463 IF S=50 THEN SOUND3,500,4,7
464 IF S=75 THEN SOUND3,500,6,7
490 BS=INKEY$(0)
500 IFBS="", THEN A=A+45
510 IFBS="", THEN A=A-45
520 IFBS="L" THEN GOSUB 6000
521 IFBS="Z" THEN GOSUB 6000
530 IFBS=" " THEN GOSUB 7000
540X=X+S*COS(RAD(A)):Y=Y+S*SIN(RAD(A))
570 IF S=25 OR-25 THEN X=INT((X+12.5)/25)
*25:Y=INT((Y+12.5)/25)*25
580 IF S=50 THEN X=INT((X+25)/50)*50:Y=INT
((Y+25)/50)*50
590 IF S=75 THEN X=INT((X+37.5)/75)*75:
Y=INT((Y+37.5)/75)*75
610 VDU19,2,5,0,0,0:GCLO,2
630 PLOT4,600,1050
640 PLOTS,600,900
647 GOSUB 10000
650 VDU19,3,0,0,0,0:GCLO,3
651X1=X:Y1=Y
652PLOT4,X,Y
6531FPOINT(X1,Y1)=2 THENGOTO9000
6541FPOINT(X,Y)=1 THENGOTO8000
655 GOSUB2040
660 GOTO455
1000 CLS
1010PRINTTAB(0,4)"Your bike has three gears and
one reverse"
1030PRINTTAB(10,6)"To start press KEY 'L' or
'Z'"
1040PRINT
1050PRINT"to change gear up you also press
KEY 'L' or 'Z'."
1060PRINT
1070PRINT"to change gear down or to brake,
press SPACE BAR."

```



```

1080 PRINT
1090 PRINT"to turn left press KEY '<' "
1100 PRINT
1110 PRINT"to turn right press KEY '>' "
1200 FOR B=1 TO 2000:NEXT B
1210 RETURN
2040 PLOT0,-30*COS(RAD(A+10)), -30*SIN(RAD
(A+10))
2050PLOT 81,15*COS(RAD(A+90)),15*SIN(RAD
(A+90))
2070 RETURN
6000 IFS<75 THEN S=S+25
6020RETURN
7000 IF S>-25 THEN S=S-25
7020 RETURN
8000SOUND4,500,150,10
8005 GOSUB 2040
8010 S=0
8020TS=INKEY$(100)
8030 IFTS="" THEN S=-25 ELSE 8020

```

SPEED TRIAL

RUNS ON A MODEL A OR B



```
8050GOTO647
9000 F=F+1
9020 IF F=F1 THEN 9040
9030GOTO655
9040 PLOT0,-30*COS(RAD(A+90)), -30*SIN(RAD(A+10))
9050PLOT 81,15*COS(RAD(A+90)),15*SIN(RAD(A+90))
9060 FOR C3= 1 TO 5000 :NEXTC3
9070 CL8
9080 PRINTTAB(6,14)"Would you like another go?"
9090K$=GET$
9100 IF K$="Y" THEN GOTO 95
9105 CL8
9109 PRINTTAB(6,14)"Good-bye"
9110 END
10000 PLOT4,X1,Y1
10020PLOT0,-30*COS(RAD(A1+10)), -30*SIN(RAD
(A1+10))
10030 PLOT 83,15*COS(RAD(A1+90)),15*SIN(RAD
(A1+90))
10040RETURN
```

BY DAVID BUNTING

Speed is the aim in this difficult game for the BBC Microcomputer model A or B.

A complicated circuit must be negotiated by the biker who aims to claim the winner's garland.

The keys to remember are "L" and "Z" for the gear changes, the "←" to move left and the "→" to move right and the space bar to hit the brakes on those corners or throw the bike into reverse.

The control of the bike takes a lot of getting used to and it will be some time before you can notch up your first perfect lap. Remember to avoid the sides of the screen as well as the black track lines.

Once you have mastered on lap in a good time, you can try and improve on a two or three lap circuit. Good luck — and watch out for those tight bends!

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If you are going to take computers to the masses, then you should take the masses to computers.

The BBC's Computer Referral Service has been set up to do just that – act as a free helpline to anyone with a little knowledge about computers and the good sense to realise that this could be a dangerous thing.

The service is part of the BBC's Computer Literacy Project which spawned the highly-praised TV series *The Computer Programme*, several books on the subject and the microcomputer which this supplement is devoted to.

And, of all those projects, the referral service provides the real evidence that the Beeb is serious about computer literacy.

It is not so much a guide into the world of computers, more of a map for anyone asking: "Where do I go from here?"

The answers it provides are: to you local computer club; to the college in the next town which is running an ideal course; to the library to take out this book, or to the new dealer in that little sidestreteet who specialises in home computers.

The service is run by the Broadcasting Support Services Unit, an independent company which is used by the BBC to provide follow-up information for people whose interests have been caught by certain BBC series.

The Computer Referral project was first set up in June last year with the awesome task of compiling a huge database of information on: computers in education; computer clubs; business consultancies; books and magazines and all the national and local organisations that can offer advice or help.

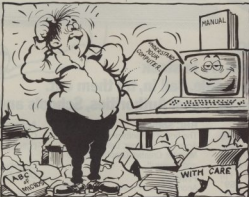
A massive mailout and close contact with the British Computer Society and the Amateur Computer Club,

produced a good response from the computing fraternity and provided a start for that database.

By December of 1981 the information was put onto computer and from then until the end of June some 89,000 enquiries were received and answered.

The information is organised geographically and is returned to the enquirer as a list of names and addresses. Depending on the nature of the enquiry and the locality the search area is adjusted.

Most common are enquiries from complete beginners who want to be put in touch with their local computer club or find out about suitable college courses. But there are 10 categories on which information can be provided.



There are also six fact sheets which broadly outline certain areas of the computer market. These are: an introductory booklet which includes general computer books and Basic programming tomes; careers in computing looks at the jobs available, the requirements and further sources of information; business advice helps with consultancies and business software houses; computers in education; hints on setting up a computer club and clubs and user groups, a list of some of the larger clubs which produce newsletters.

But like this magazine, the service draws the line at advising people on which microcomputer is best suited to their purpose, which, according to project officer David Highton, is one of the more common requests.

To put the service to the test we wondered if it had any information about our magazine Owl. Yes it does:

"At present Owl is an occasional pull-out supplement to *Computer & Video Games* and the next one will be in the September issue. It may, however, be available separately in due course. Like the parent it is mainly a games magazine although it will cover items of more general interest.

"*Computer & Video Games* costs 75p and is available at most newsagents."

Sounds pretty fair.

The BBC Computer Referral Service was set up to run in tandem with the television series *The Computer Programme*.

Where the programme kindled an interest the Referral Service fuelled the fire with a rundown of local information centres and other starting points for the computer beginner. 89,000 enquiries later it is still going strong.

The BBC Computer Referral Service will provide information in 10 categories:

- Clubs and user groups
- Informal advisory groups like workshops
- British Computer Society branches
- Introductory college courses
- Advanced college courses
- Business courses
- Business consultancies
- Acorn dealers
- Courses for teachers
- BBC user groups

The service is free and enquiries should be addressed to: The Computer Referral Service, P.O. Box 7, London W3 6XJ.

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